

5            1.            A method of producing metal hydride misch-metal composite powders, the method comprising the steps of:

electrodepositing one or more non-lanthanide metals on the powder via the apparatus.

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3. The method of claim 1 wherein the electrodepositing step comprises only partially encapsulating the particles with the one or more non-lanthanide metals.

20 catalytic elements after the step of electrodepositing one or more non-lanthanide metals.

25           6.           The method of claim 5 wherein the step of electrodepositing crystalline catalytic elements comprises electrodepositing one or more of palladium and platinum.

7. The method of claim 1 wherein in the electrodepositing step the one or more non-lanthanide metals comprises one or more of nickel, copper, tin, and zinc.

8. A composition of matter produced by the method of any of claims 1-7.

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9. A metal hydride misch-metal powder comprising a powder whose particles comprise an inner core comprising one or more lanthanide metals and a porous outer encapsulant comprising one or more non-lanthanide metals.

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10. The powder of claim 9 wherein said particles additionally comprise crystalline catalytic elements on outer surfaces of said particles.

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11. The powder of claim 10 wherein said crystalline catalytic elements comprise one or more noble metals.

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12. The powder of claim 11 wherein said crystalline catalytic elements comprise one or more of palladium and platinum.

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13. The powder of claim 9 wherein said one or more non-lanthanide metals comprises one or more of nickel, copper, tin, and zinc.

14. The powder of claim 9 wherein said inner core additionally comprises one or more of nickel and titanium.